



# SPP3401

## P-Channel Enhancement Mode MOSFET

### DESCRIPTION

The SPP3401 is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

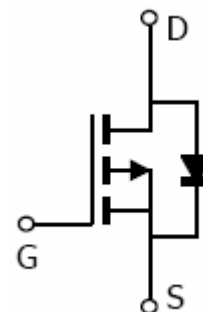
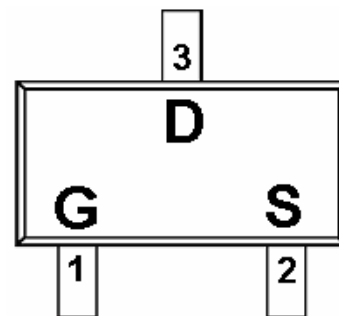
### FEATURES

- ◆ -30V/-4.0A, $R_{DS(ON)} = 55m\Omega @ V_{GS} = -10V$
- ◆ -30V/-3.2A, $R_{DS(ON)} = 65m\Omega @ V_{GS} = -4.5V$
- ◆ -30V/-1.2A, $R_{DS(ON)} = 75m\Omega @ V_{GS} = -2.5V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-23-3L package design

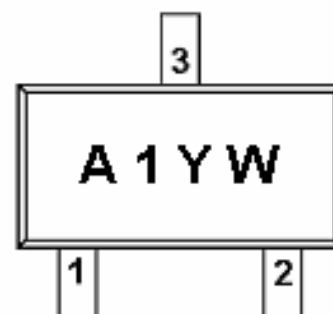
### APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

### PIN CONFIGURATION(SOT-23-3L)



### PART MARKING



Y : Year Code  
W : Week Code



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### PIN DESCRIPTION

Pin	Symbol	Description
1	G	Gate
2	S	Source
3	D	Drain

### ORDERING INFORMATION

Part Number	Package	Part Marking
SPP3401S23RG	SOT-23-3L	A1YW

※ Week Code : A ~ Z( 1 ~ 26 ) ; a ~ z( 27 ~ 52 )

※ SPP3401S23RG : Tape Reel ; Pb – Free

### ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V <sub>DSS</sub>	-30	V
Gate –Source Voltage		V <sub>GSS</sub>	±12	V
Continuous Drain Current(T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	I <sub>D</sub>	-4.0	A
	T <sub>A</sub> =70°C		-3.2	
Pulsed Drain Current		I <sub>DM</sub>	-15	A
Continuous Source Current(Diode Conduction)		I <sub>S</sub>	-1.0	A
Power Dissipation	T <sub>A</sub> =25°C	P <sub>D</sub>	1.25	W
	T <sub>A</sub> =70°C		0.8	
Operating Junction Temperature		T <sub>J</sub>	150	°C
Storage Temperature Range		T <sub>STG</sub>	-55/150	°C
Thermal Resistance-Junction to Ambient		R <sub>θJA</sub>	120	°C/W



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### ELECTRICAL CHARACTERISTICS

(T<sub>A</sub>=25°C Unless otherwise noted)

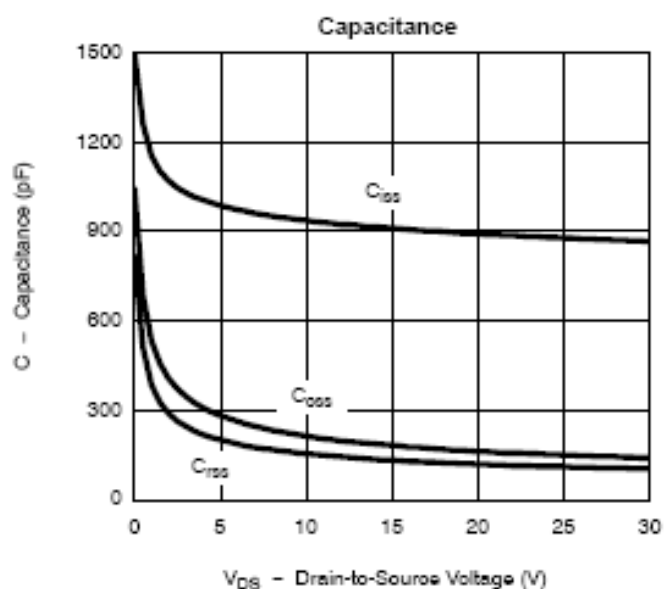
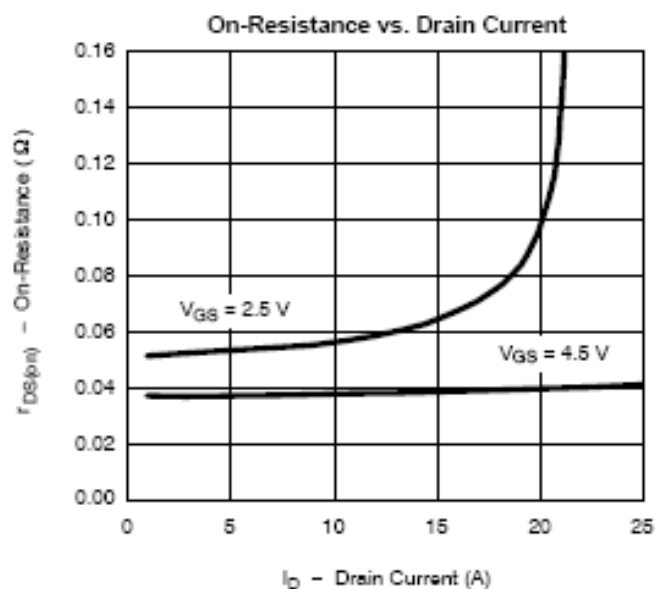
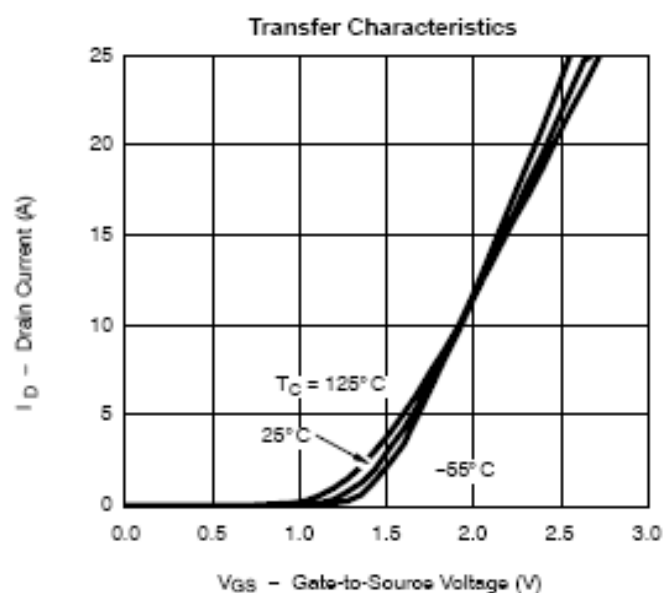
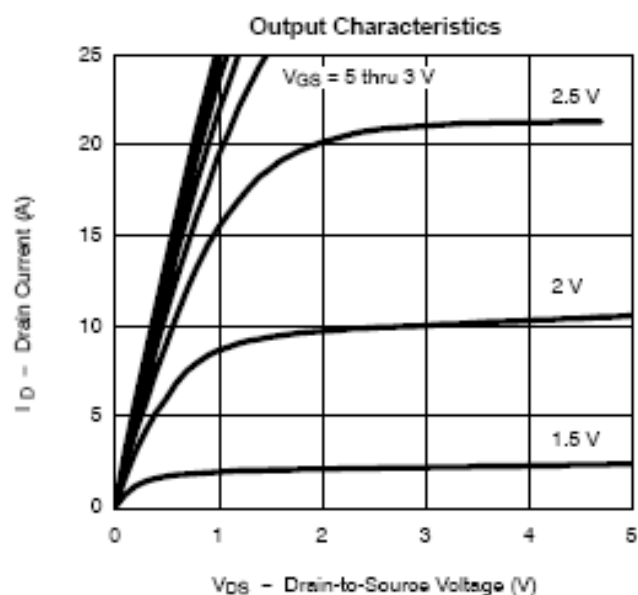
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-0.4		-1.0	
Gate Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V			-1	uA
		V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V T <sub>J</sub> =55°C			-10	
On-State Drain Current	I <sub>D(on)</sub>	V <sub>DS</sub> ≤ -5V, V <sub>GS</sub> =-10V	-10			A
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-4.0A		0.045	0.055	Ω
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3.2A		0.050	0.065	
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-1.2A		0.060	0.075	
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =-5.0V, I <sub>D</sub> =-4.0A		10		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1.0A, V <sub>GS</sub> =0V		-0.8	-1.2	V
<b>Dynamic</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =-10V I <sub>D</sub> =-4.0A		14	21	nC
Gate-Source Charge	Q <sub>gs</sub>			1.9		
Gate-Drain Charge	Q <sub>gd</sub>			3.7		
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V f=1MHz		540		pF
Output Capacitance	C <sub>oss</sub>			131		
Reverse Transfer Capacitance	C <sub>rss</sub>			105		
Turn-On Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-15V, R <sub>L</sub> =15Ω I <sub>D</sub> =-1.0A, V <sub>GEN</sub> =-10V R <sub>G</sub> =6Ω		10	15	ns
	t <sub>r</sub>			15	25	
Turn-Off Time	t <sub>d(off)</sub>			31	50	
	t <sub>f</sub>			20	30	



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### TYPICAL CHARACTERISTICS

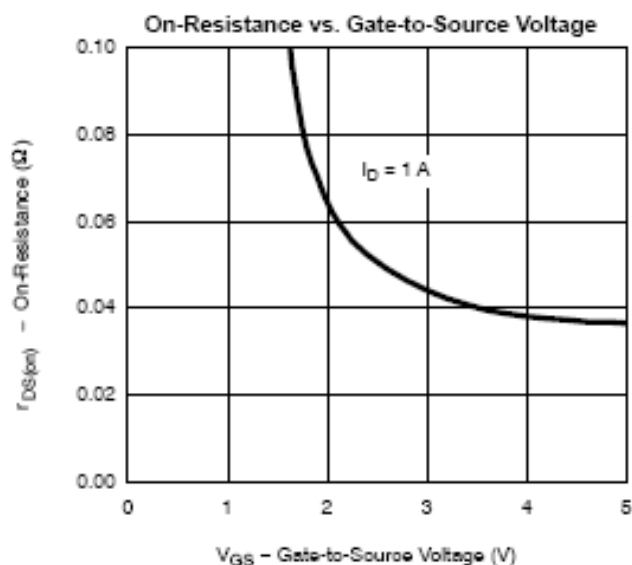
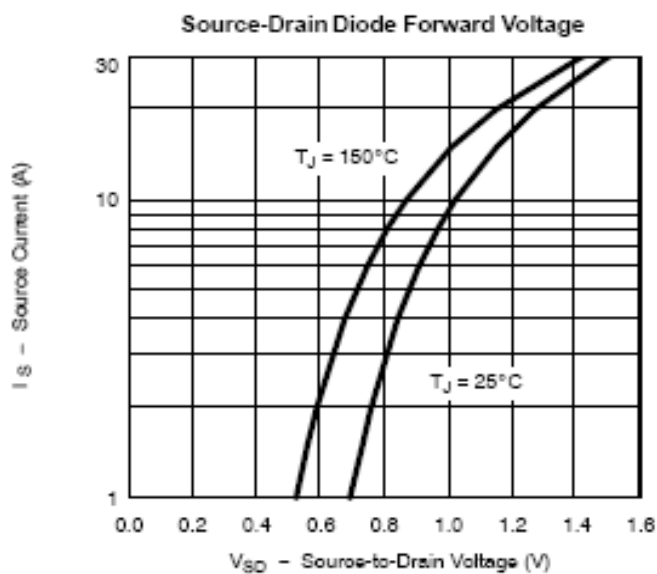
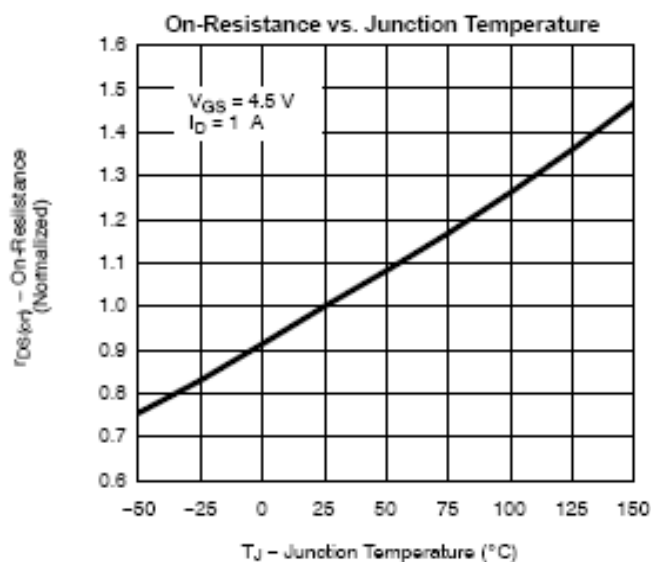
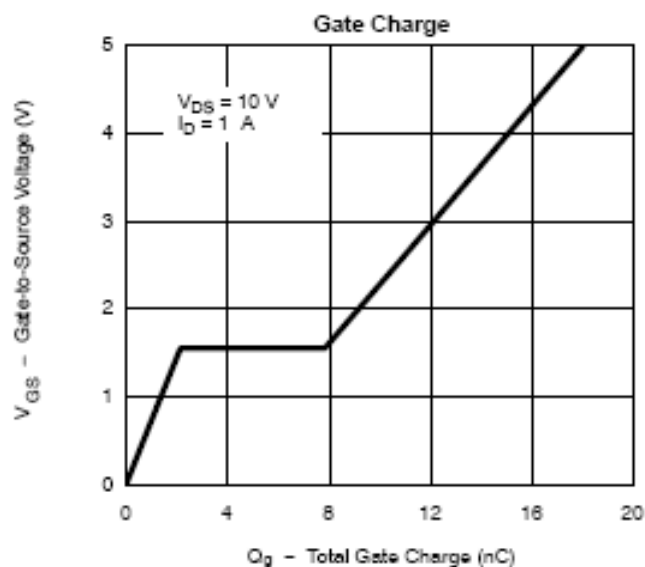




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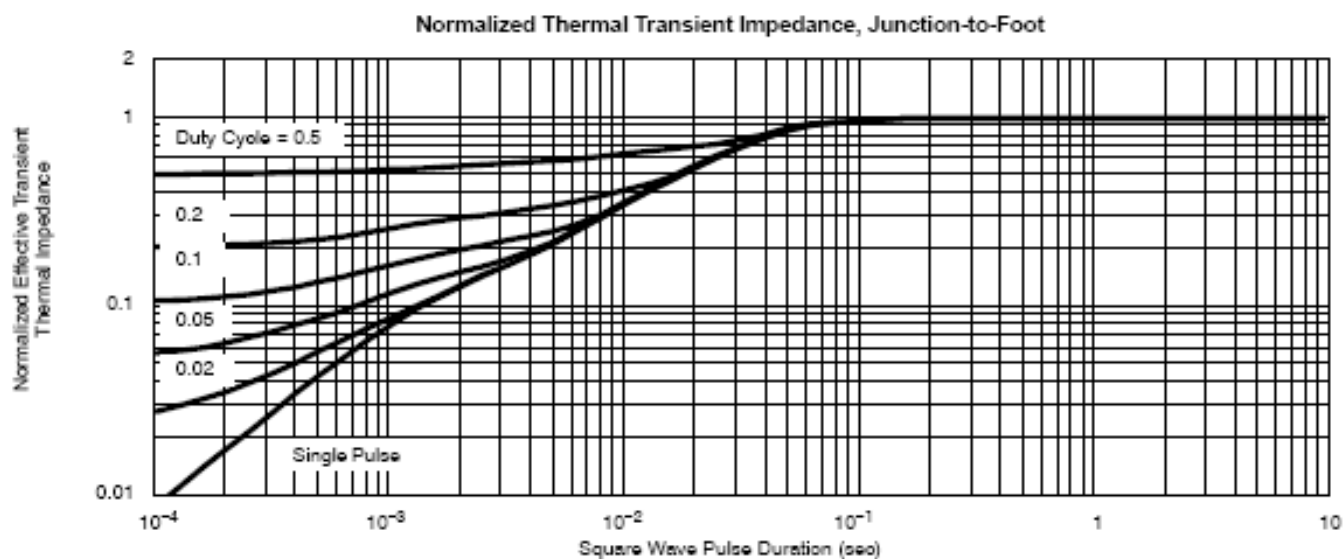
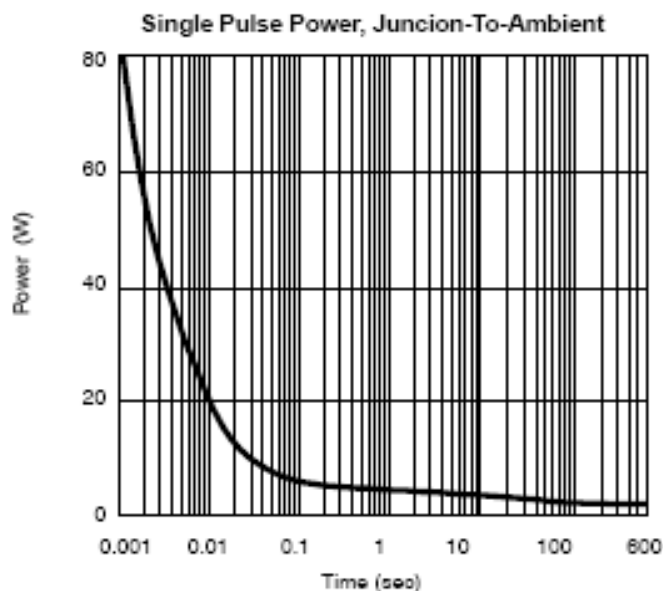
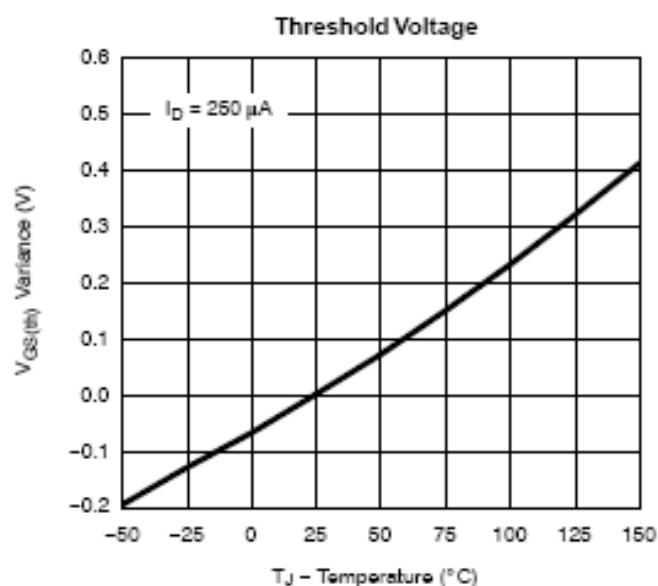




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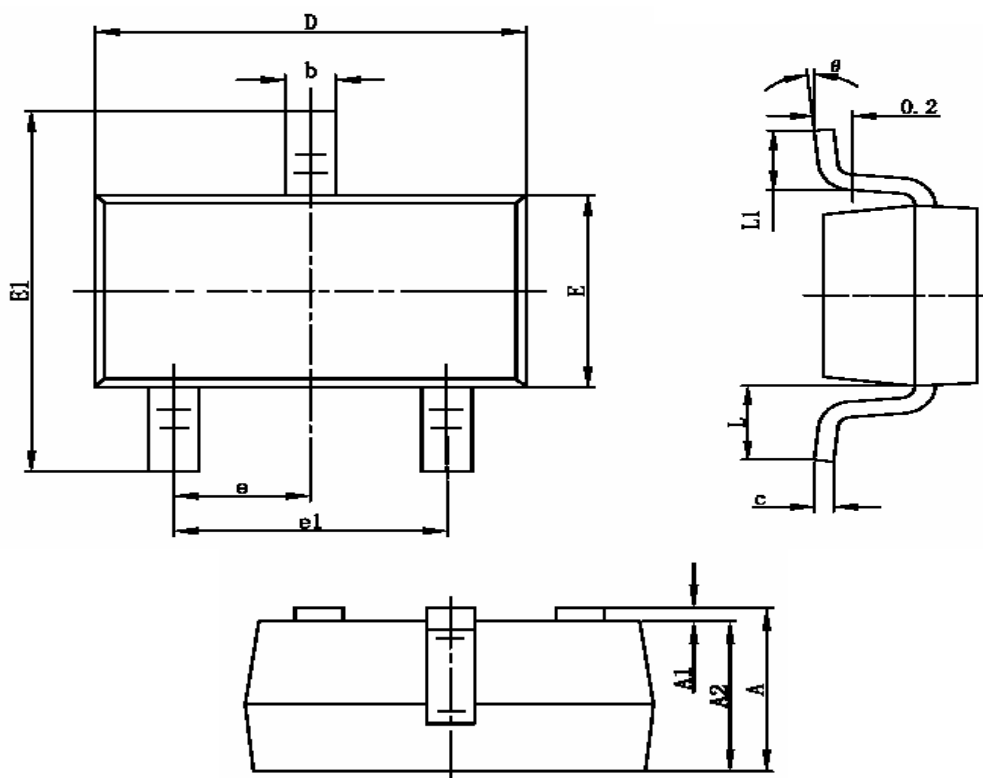




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### SOT-23-3L PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°



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